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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/623,025	07/18/2003	Shoji Suzuki	004085.P032	4457

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EXAMINER
HABERMEHL, JAMES LEE

ART UNIT	PAPER NUMBER
2651	

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Daniel E. Ovanezian
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Seventh Floor
12400 Wilshire Boulevard
Los Angeles, CA 90025-1026

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/623,025	SUZUKI, SHOJI	
	Examiner	Art Unit	
	James L Habermehl	2651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2003 and 25 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-30 and 32-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *2-19 and 32-39* is/are allowed.

6)☒ Claim(s) *20-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *18 Jul 03 and 25 Jun 04*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. This Office action is in response to papers filed 18 July 2003 and 25 June 2004, which papers have been placed of record in the file.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 20-21, 24-25, and 28-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Kasamatsu et al.

Regarding claim 20, Kasamatsu et al. Figures 1(c)-2(b) and 7(a)-7(c) meet all the limitations of the claims, including a slider body (1), an air bearing surface (41/42), a leading edge step (8), a protrusion (61/62) on the leading edge step that extends beyond the air bearing surface (Figure 2(b)), and has a contoured leading edge (Figure 2(b). Regarding claim 21, Figure 2(b) shows a read/write head element, and geometry dictates that the height be proportional to the distance and some arbitrary pitch angle. Applicant has not claimed any specific structural condition defining a specific pitch angle (for example, during read/write operation). Regarding claim 24, Kasamatsu et al. shows a plurality of protrusions (61/62/63/64).

Regarding claim 25, Kasamatsu et al. Figures 1(c)-2(b) and 7(a)-7(c) meet all the limitations of the claim, including flying a slider body with a positive pitch angle over a data zone surface of a disk (Figures 1(c) and 7(b), col. 1, lines 40-43, and col. 5, line 49 through col. 6, line 3), and maintaining the positive pitch angle of the slider body during contact between the slider body and the data zone surface of the disk (Figures 2(b) and 7(c)). Regarding claim 28, the positive pitch angle is maintained using at least one protrusion disposed forward of a pivot point of the head (Figure 2(b) and 7(b)-7(c)). Regarding claims 29-30, a friction force must necessarily be generated during contact between the slider and the disk, and the at least one protrusion (61) has a contoured leading edge step (Figures 2(a)-2(b), the edge nearest the disk in front is ramped) which must necessarily therefore generating some amount of counter force against a contact force.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 22-23 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kasamatsu et al. Kasamatsu et al. meets all the additional limitations of these claims for the reasons given above regarding claims 20 and 25, except it does not explicitly specify a pitch angle range of 20-50 microradians, nor of 50-200 microradians, during operation. It does specify a positive pitch angle, but is silent as to the exact range of angles disclosed. It would have been

obvious to one of ordinary skill in the art at the time the invention was made to use a pitch angle of 20-50 microradians or of 50-200 microradians, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Claims 2-19 and 32-39 are allowed over the prior art of record. The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a load/unload disk drive comprising a securing mechanism configured to receive the suspension arm to load and unload the slider body, and a disk wherein the protrusion maintains the slider body with a positive pitch attitude during contact between the slider body and the data zone of the disk surface, as presented in the environment of claim 2. It is noted that the closest prior art, Kasamatsu et al., shows a positive pitch attitude maintaining protrusion similar to the claimed invention. However, Kasamatsu et al. fails to disclose a securing mechanism configured to receive the suspension arm to load and unload the slider body, and a disk wherein the protrusion maintains the slider body with a positive pitch attitude during contact between the slider body and the disk surface as claimed.

Claim 32 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method comprising providing a slider with a first protrusion forward of the load pivot point, flying the slider in a load/unload disk drive, and maintaining a positive pitch angle of the slider during contacting the slider with the disk surface over a data zone, as presented in the environment of claim 32. It is noted that

the closest prior art, Kasamatsu et al., shows a positive pitch attitude maintaining protrusion similar to the claimed invention. However, Kasamatsu et al. fails to disclose providing a slider with a first protrusion forward of the load pivot point, flying the slider in a load/unload disk drive, and maintaining a positive pitch angle of the slider during contacting the slider with the disk surface over a data zone as claimed.

Claim 36 is allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose a method comprising determining a minimum pitch angle of operation for a slider, and determining a protrusion height directly proportional to a distance of the read/write element from the protrusion and the minimum pitch angle of the slider, as presented in the environment of claim 36. It is noted that the closest prior art, Kasamatsu et al., shows a positive pitch attitude maintaining protrusion similar to the claimed invention. However, Kasamatsu et al. fails to disclose determining a minimum pitch angle of operation for a slider, and determining a protrusion height directly proportional to a distance of the read/write element from the protrusion and the minimum pitch angle of the slider as claimed.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ananth et al. Figures 2-3, Tokoyama et al. Figures 1-2 and 6-7, Boutaghou Figures 2-5, Boutaghou et al. ('088) Figures 5-1 and 5-2, Kameyama Figures 2-3 and 9-18, and Boutaghou et al. ('939) Figures 2-3 and 5-6 all show sliders similar to applicant's invention.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James L Habermehl whose telephone number is (703)305-6975. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (703)308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Habermehl/jlh
17 Feb 05

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600